NDEP-Directed Engineering Evaluation #1
Water Treatment Options for Perchlorate Impacted Groundwater at the Las Vegas Wash

Nevada Environmental Response Trust

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Introduction

Southern Nevada Water Authority (SNWA) is planning two weir construction projects that begin in 2015, Sunrise Mountain Weir and the Historical Weir Expansion. Both projects involve the use of dewatering techniques to depress the water table such that construction of the weirs can be completed in dry conditions. NDEP has requested the Nevada Environmental Response Trust (NERT) complete a high level engineering evaluation of potential treatment technologies and provide cost estimates to implement each viable alternative. This evaluation will be delivered as a technical whitepaper that assesses, at minimum, the feasibility, constructability, preliminary cost estimates, presumed effectiveness and operation and maintenance considerations for the project.

Scope of Work

The Engineering Evaluation should include the following:

1. Identify up to four applicable treatment technologies for perchlorate impacted groundwater. At a minimum the use of biological treatment (i.e., fluidized bed reactors) and ion exchange (IX) should be considered. Each applicable technology should undergo a preliminary screen to determine if the technology can be used to remove perchlorate from groundwater given groundwater chemistry adjacent to the Las Vegas Wash. The preliminary screening should assume that groundwater will contain perchlorate at concentrations of 3 mg/L and dewatering will generate up to 6,900 gallons per minute.
2. Prepare preliminary cost estimates to mobilize, construct, permit, and operate each of the acceptable treatment technologies for a 1.5 year period near the Pabco Road Weir. Cost estimates should be follow U.S. EPA Feasibility Study guidance and should itemize capital and operation and maintenance costs.
3. Prepare a table that documents the screening of the applicable treatment technologies. Each technology should be screened based on their effectiveness, implementability, cost, and schedule for implementation. The cost estimate must assume expedited construction and permitting and no access constraints will delay mobilization.
4. Provide a justification for the recommended technology and prepare a conceptual design.

5. Evaluate treating a portion of the groundwater extracted for dewatering purposes (using the recommended technology) and propose an option that reduces perchlorate loading to the Las Vegas Wash yet minimizes total project cost.